



March 2003

Volume IV, Issue 3

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EGLIN AIR FORCE BASE, Fla. — The Air Force tested its Massive Ordnance Air Blast (MOAB) weapon at the Eglin Air Force Base Air Armament Center's western test range March 11. Dropped from a C-130, the MOAB is a precision guided weapon weighing 21,500 pounds. It will be the largest non-nuclear conventional weapon in existence. The MOAB is an Air Force Research Laboratory Munitions Directorate technology project that began in fiscal year 2002 and is to be completed this year. (Photo courtesy of Department of Defense)

AFRL names annual award winners

by Jill Bohn, AFRL Public Affairs

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The year's top enlisted and officer personnel were honored Feb. 21 during the Air Force Research Laboratory's 6th annual awards banquet.

Maj. Gen. Paul D. Nielsen, commander of the Air Force Research Laboratory, and retired Chief Master Sergeant of the Air Force Sam E. Parish, presented the awards at the ceremony at Hope Hotel.

"This year's nomination packages were extremely competitive, which made it difficult to single out winners. AFRL is fortunate to have such a talented field from which to choose," said Nielsen. "It is an honor to recognize our newest award winners for their leadership, dedication and community involvement."

AFRL Airman of the Year

The award for Outstanding Airman of the Year was presented to Senior Airman Benjamin D. Bythewood, Space Vehicles Directorate, Hanscom Air Force Base, Mass.

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March 2003

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news@afrl is published monthly by the Office of Public Affairs of Air Force Research Laboratory Headquarters. Contact the office at AFRL/PA, Building 15 Room 225, 1864 4th St., WPAFB, Ohio, 45433-7132, (937) 656-9872/9876, or send e-mail to AFRL.PA@afrl.af.mil. Contents of this newsletter are not necessarily the official views of, or are endorsed by, the U.S. Government, the Department of Defense or the Department of the Air Force. The editorial content is edited, prepared and provided by this office. Photographs are official U.S. Air Force photos unless otherwise indicated. Submission guidelines are available from this office or on-line. Electronic copies and additional full-text articles are available on-line at:

<http://extra.afrl.af.mil/news/index.htm>

Air Force breaks ground for \$15.5M facility

by J. Rich Garcia, Directed Energy Directorate

KIRTLAND AIR FORCE BASE, N.M. — Senators Pete Domenici (R-N.M.) and Jeff Bingaman (D-N.M.) were among the dignitaries who officiated Feb. 20 at a groundbreaking ceremony for a \$15.5 million laboratory.

The 52,000-square-foot facility will support the Air Force Research Laboratory's Directed Energy Directorate in its advanced optical research, laser propagation and space object imaging.

This new facility, called the Telescope and Atmosphere Compensation Laboratory, will feature an aluminizing recoating capability for large mirrors. One such mirror is the 3.5-meter primary mirror on the directorate's largest telescope at Kirtland's Starfire Optical Range. This recoating capability could also be used on the large mirrors at local astronomical observatories. There will be enough laboratory space – and associated optics, electronics and computers – to design, construct, test and integrate experimental hardware for optical research. Also included will be office space, conference rooms, and group work areas for 84 scientists, engineers, and technicians who are currently housed in portable buildings and trailers in the area.

The directorate, at its Starfire Optical Range, uses several telescopes for its advanced optical research. These include a 1.0-meter beam director, a 1.5-meter telescope and a 3.5-meter telescope. All are capable of tracking low-earth-orbit satellites, and all are equipped with large-scale, high-performance adaptive optical systems. The range also has numerous smaller telescopes, beam directors, laser systems, and a variety of optics, electronics and mechanical laboratories. Directorate researchers conduct field experiments in various technology areas, such as real-time atmospheric compensation, atmospheric turbulence physics, and target acquisition, pointing, and tracking.

K. L. House, Inc. of Albuquerque, N.M., was awarded this contract by the Albuquerque District of the U.S. Army Corps of Engineers. The corps is supervising the contractor's design and construction activities. The building is scheduled for completion in April 2004. @

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Test Pilot School accepts three for engineer program

AFRL, EPA sign homeland security agreement

HE research sparks industry milestone

Researchers develop system enabling force protection and active range clearance

by Timothy R. Anderl, Materials and Manufacturing Directorate

TYNDALL AIR FORCE BASE, Fla. — Engineers at the Air Force Research Laboratory have developed a robotic platform that enables the Air Force community to accomplish its most harrowing munitions disposal and range maintenance missions.

AFRL's Airbase Technologies Division Robotics Research Group, part of the Office of the Secretary of Defense (OSD) Joint Robotics Program, developed the All-Purpose Remote Transport System (ARTS) in cooperation with Air Combat Command and the 99th Civil Engineering Group, Nevada Test Ranges. The robotic technology, which is multi-mission capable and unmanned, has established its value during range clearance operations, and demonstrates great potential in force protection, fire fighting, natural disaster clean-up, foul-weather operations, range remediation, and active range clearance.

"The purpose of ARTS is to reduce the risk to warfighters responding to real-world situations and accomplishing critical Air Force mission goals," Walter M. Waltz, the Robotics Group Leader said. "While there are specific tools used for active range clearance and force protection, the 'all-purpose' nature of ARTS allows for interoperability across multiple missions."

ARTS is a modified version of a construction tractor, the Posi-Track MD70. The platform has a diesel engine that delivers power to the 18-inch wide, Kevlar-reinforced rubber tracks. The tracks have over 3,000 square inches of contact area, resulting in ground contact pressure of approximately two pounds per square inch. In addition, a remotely operated pintle hitch on the platform provides the capability to tow and release a payload.

"This vehicle profile allows for a low center of gravity and light footprint, which makes it rugged, reliable, and the perfect candidate for range operations because it minimizes forces that could detonate sensitive munitions," Waltz said.

Directorate researchers also developed the robotics control package. The package enables remote operation of all tractor functions. The standard configuration includes provisions for four fixed video cameras. A pair of digital radios transmit command signals from the operator control unit (OCU), which resides a safe distance from dangerous operations, to the vehicle. An independent transmitter/receiver pair communicates audio and video from the vehicle to the OCU.

To meet urgent and compelling requirements in Southwest Asia and in Europe, Waltz said the directorate transitioned an ARTS "build to print" technical documentation package to Vertek Inc. for production and support. Vertek engineers built 18 units that were distributed worldwide.



The All-Purpose Remote Transport System (ARTS) is a tool developed to protect warfighters from hazardous situations, and to provide them with a robust suite of tools with which they can accomplish force protection and active range clearance activities while staying out of "harm's way." The system is designed to provide explosive ordnance personnel with remote stand-off distances to perform submunition and mine clearance operations. (Air Force photo)

The directorate also distributed the technical transition package to the Air Armament Center's Engineering Manufacturing and Development System Program Office, the office responsible for final configuration and maintenance of the system. Currently, 41 ARTS units are fielded throughout the Air Force and an additional 22 units are scheduled for production.

The Air Force operates several bombing ranges where pilots train by dropping lethal anti-armor/anti-personnel weapons. Periodically, EOD teams must clear debris, such as bomb fragments, from the range. Past methods required the teams to walk the area, manually cleaning the range. Air Force explosive ordnance disposal (EOD) personnel now use the system to perform a variety of range clearance and unexploded ordnance (UXO) tasks such as clearing sub-munitions using a surface clearance blade, and towing a trailer and remotely disconnecting it.

When the United States transferred ownership of the Panama Canal back to the Panamanian government, the Air Force had to clear UXOs from ranges at Howard Air Base, which pilots used during the 1960s and 1970s. Ten-foot-tall jungle grass had overgrown the target area, and any surface UXO presented EOD personnel with a tremendous challenge. Clearing such ranges required personnel to burn the foliage, but jungle grass has the tendency to fold over and not burn thoroughly. In order to properly clear Howard AB using this method, personnel would have to saturate the area with a burning agent, and burn the foliage to an acceptable level to where EOD personnel could clear the UXOs. @

Having joined the Air Force in 1998, he currently works as an electronics technician focusing on the design implementation of the Planar Langmir Probe.

He is active in on base programs such as the shelter management team and dorm area council. Off base, he assists the Adopt-A-Ward program and helps with New England's shelter for homeless veterans.

Bythewood was elected as Airman of the Quarter for 2002. He also earned distinction in technical training by winning the Distinguished Graduate Award.

Non-Commissioned Officer of the Year

Tech. Sgt. Terri L. Scholin, Human Effectives Directorate, Brooks City Base, San Antonio, Texas, was selected as the Non-Commissioned Officer of the year.

Scholin is the NCOIC of the Radio Frequency Radiation Branch. She joined the Air Force in October 1988.

On base, she is active in the Air Force Sergeants Association and the base varsity sports program. Off base, she is active in supporting and participating in charity events such as the Multiple Sclerosis Fun Run/Walk, the Susan B. Komer "Race for the Cure", San Antonio Youth Sports Foundation 5K, and the U.S. Marine Corp sponsored 2002 Gateway youth camp.

Previous awards include, Human Effectiveness Directorate NCO of the Quarter 2002; and Human Effectiveness Directorate NCO of the Year 2002; AFRL Detachment 5, NCO of the Quarter 2001; AFRL Detachment 5, NCO of the Quarter 2002; and AFRL Detachment 5, NCO of the Year 2002.

Senior Non-commissioned Officer of the Year

Senior Non-commissioned Officer of the Year was presented to Master Sgt. Forest Lisner, Materials and Manufacturing Directorate, Tyndall Air Force Base, Fla.

Lisner is an engineering superintendent/first sergeant, assigned to AFRL's Detachment 2. He joined the Air Force in December 1986.

He enjoys coaching sports for the youth center on base and in the local community. He spends his free time boating and fishing with his family.

Other recent awards that Lisner has earned include SNCO of

the Year for 28th CES, 2000; SNCO of the Year of the Year for 28th Support Group, 2000; SNCO for AEF 8 rotation at Prince Sultan Air Base, 2001; AFRL ANCO of the Quarter for the third quarter of 2002; Professional performer during three Operational Readiness Inspections 1994, 1996 and 2001; ORI superior Performance team awards for 1996 and 2001.

Company Grade Officer of the Year

Capt. Wynn Sanders, Materials and Manufacturing Directorate, Wright-Patterson Air Force Base, Ohio, was presented the award for Outstanding Company Grade Officer of the Year.

A project manager for advanced metals research and development, Sanders was commissioned into the Air Force in June 1997. He attended graduate school at the Massachusetts Institute of Technology on a National Defense Science and Engineering Fellowship, and entered active duty in June 2001.

He was awarded CGO of the Quarter 2002 for both Materials and Manufacturing Directorate and the Air Force Research Laboratory and 2002 CGO of the Year for the Materials and Manufacturing Directorate.

He is active in on-base programs, such as CGO and Combined Federal Campaign. Off base, he volunteers for Habitat for Humanity and tutors area students.

Reservist of the Year

Maj. Darryl J. Sanchez, Directed Energy Directorate, Phillips Research Site, Kirtland Air Force Base, N.M., was selected as the Outstanding Reservist of the Year.

A 1984 graduate of the U.S. Air Force Academy, Sanchez is a high-energy laser physicist. He currently works as a professor at the University of New Mexico, while assigned to AFRL.

Sanchez volunteered for and served eight months of active duty to work on solving the boost phase ballistic missile defense program with the Airborne Laser Technologies Branch.

He is a member of the Optical Society of America and the Society of Professional Instrumentation Engineers. An enthusiastic mountain biker, he also supports both New Mexico's premier performing arts center, and the University of New Mexico basketball program. @

AFRL recognizes Johnson as top Reserve CGO for 2002

by Katherine Gleason, AFRL Public Affairs

ARLINGTON, Va. — Capt. Tom Johnson has been announced as the recipient of the 2002 Air Force Research Laboratory Reserve Company Grade Officer.

Johnson works as a Bioeffects Program Manager for the Air Force Office of Scientific Research. He has been with AFRL since Oct. 2000.

Prior to joining the Air Force Reserve Individual Mobilization Augmentee program in 1994, Johnson served in the Navy and trained in the Navy Nuclear Power Program. Following his separation from the Navy, he attended the University of Illinois, and obtained his master's degree in 1991. He also received a master's degree in Environmental Engineering from Northwestern University.

Former AFOSR Commander Col. Steven Reznick nominated Johnson, noting that he was the unit's first reserve officer to develop, compete for and won funding for a Multi-University Research Initiative.

"I'm flattered and honored to be receiving this award," Johnson said. "There are so many deserving people out there, that I was surprised when I found out that I had been selected."

Johnson credited his supervisor and colleagues for helping him win the award.

"This is all because my supervisor, Dr. Robert Barker, is absolutely fantastic," he said. "Everyone at AFOSR treats me well, and makes it easy to do a good job. I really feel like part of the AFOSR team." @

ML sponsored blood drives help with increased need

by Katherine Gleason, AFRL Public Affairs

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — With military troops being deployed throughout the world, the United States Armed Forces are finding themselves with an increased need for blood.

Blood must be collected constantly to replace aging contingency supplies, and to meet the needs of the military health system. Every year, military hospitals transfuse more than 62,000 units of red cells, more than 20,000 units of plasma, and more than 30,000 units of platelets. A single trauma case can require 40 units of blood.

Two February blood drives hosted by the Air Force Research Laboratory's Materials and Manufacturing Directorate were a step in helping meet this need. The drives, held Feb. 12 and 26 netted 151 units of blood, which met their established goal. Seventy-three units were collected on the 12th, and 78 on the 26th.

"The numbers were very good," said Mary Shelly, environment, safety, and occupational health training program manager and unit blood coordinator. "The amount donated on each day was equivalent to what we usually get over a two-day period. The donor center has always been pleased with the turnout for our drives."

According to Marti Isherwood, Blood Donor Recruiter, drives such as these provide needed blood for the Armed Services Blood Program (ASBP).

"The military, unlike civilian agencies, can't simply go out into the community and host a blood drive," she said. "We have to establish involvement within the military community. The military has a great need for blood throughout the world, especially in forward contingency locations."

When the ASBP cannot meet its needs for blood and blood products, the military must purchase them from civilian agencies at approximately 250 dollars per unit.

"I'm a former medic, and I always took the blood supply for

granted," said Isherwood. "Now, I realize the importance of reaching out and helping people understand why they should donate."

Many people have questions about their eligibility to donate, or concerns about the safety of the process. The ASBP notes that individuals can donate blood every 56 days (eight weeks), and that the entire process takes about one hour. The basic eligibility guidelines are that you be at least 17 years of age, weigh 110 pounds, do not have a cold or other illness, and are a military beneficiary or federal government employee. Some additional guidelines were put into effect in 2001. For more information on donor eligibility, please contact the Donor Center at (937) 257-0580 or (937) 257-9364.

The process is very safe, with new, sterile needles used for each donation. Also, your body will replace blood volume or plasma lost within 24 hours, and red blood cells within four to eight weeks.

Additional AFRL blood drives are being held on May 14 and 28, Aug. 13 and 27, and Nov. 12 and 26. However, Shelly commented that interested donors can give at anytime by making an appointment with the Donor Center. Additionally, for Wright-Patterson Armed Services blood drive information, or if your organization would like to schedule a blood drive, contact Isherwood at (937) 257-1038, or marti.isherwood@wpafb.af.mil.

The Military Blood Program was established in 1952 by Presidential Order as part of the National Blood Program. The ASBP currently operates at 151 locations throughout the world, including 81 blood banks and donor centers. The program maintains 65,000 units of frozen blood and 5000 units of liquid cells at all times to meet readiness requirements.

More than 800 military and civilian personnel from the Air Force, Army, and Navy are a part of this program, which helps provide blood products and services to the military community in both peacetime and war. For more information, visit www.tricare.osd.mil/asbp.

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AFRL's Propulsion team doubles capacitor capabilities

by Michael Kelly, Propulsion Directorate

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The viability of powerful directed energy weapons on future Air Force aircraft just got a shot in the arm with a greater than two-fold improvement to key electrical components that are needed to make the lasers work.

Air Force Research Laboratory Propulsion Directorate researchers involved in the developmental testing of Diamond-Like Carbon Capacitors, or DLCs, say their progress is the most significant progress made in the area of dielectrics in decades.

"Our team of scientists and engineers has enabled the production of capacitors with vastly improved energy density and temperature capabilities that are more than two times better than today's state-of-the-art capacitors," said Sandra Fries-Carr, manager for the DLC capacitor program in the Electrical Technology and Plasma Physics Branch.

Capacitors, which store an electrical charge, are a critical component in nearly every military and commercial high performance system, Carr pointed out. She said the improvements are crucial for airborne applications of directed energy weapons, or DEWs, because they offer considerable savings in system weight, im-

proved electrical performance and can withstand the types of temperatures generated by the power systems feeding the lasers.

DLC has unique properties such as high temperature stability, high thermal conductivity and exceptional mechanical strength, explained Fries-Carr. "These properties make it attractive for use in advanced power management and distribution systems where temperatures above 300 degrees centigrade (approximately 570 degrees Fahrenheit) are expected.

The capabilities of these capacitors will also enable electrically driven aircraft accessories, such as engine mounted actuators, sensors and mounted flight controls for the Air Force's more electric aircraft like the Joint Strike Fighter, Fries-Carr said.

In addition to doubling the energy density and temperature capabilities of current capacitors, the team recently demonstrated continuous and uniform deposition of DLC by manufacturing a 25-foot length of the DLC capacitor film.

A collaborative effort is now underway to create an aggressive DLC technology transfer program to transition this product to the commercial sector. @

Net Index

Due to the number of submissions we receive, some sections of *news@afrl* are available exclusively on-line. The on-line version of the newsletter allows users to view the AFRL corporate calendar, news releases generated by AFRL headquarters, operating instructions, L@b L@urels and Roundups sections.

The L@b L@urels section of the electronic newsletter is dedicated to members of Air Force Research Laboratory who receive awards and honors. The Roundups section of the electronic newsletter keeps Air Force Research laboratory employees informed about contracts AFRL has awarded. Below is an index of articles one can find in each of these on-line sections.

L@b L@urels

- AFRL honors its best during 6th Annual Awards
- Directorate honors top military personnel
- Engineer honored for AFCEA contributions

Roundups

- AFRL Rome awards \$2.4M contract to Nevada firm
- Rome awards \$1.4M contract to Aldroit Systems
- Information Directorate awards \$24.9M contract

To view the full text of these and other articles visit the *news@afrl* page on the Internet at <http://extra.afrl.af.mil/news/index.htm>.

To submit L@b L@urels or Roundups from your directorate, send a query to AFRL Public Affairs at:

Jill.Bohn@afrl.af.mil

*For more on these stories see news@afrl
<http://extra.afrl.af.mil/news/index.htm>*

Simulated bomb detonation at Rome



ROME, N.Y. — “Victims” are led from a decontamination tent at the AFRL Rome Research Site, where a mass casualty/disaster preparedness drill was conducted Feb. 4 to test the emergency response of laboratory and community personnel. The scenario involved the detonation of a bomb, possibly a radiological device or “dirty bomb.” The exercise included participation from the Northeast Air Defense Sector at the Griffiss Business & Technology Park, Rome police and fire departments, the Oneida County Hazardous Materials team and personnel at Rome Memorial Hospital. (Air Force Photo by Albert P. Santacroce)